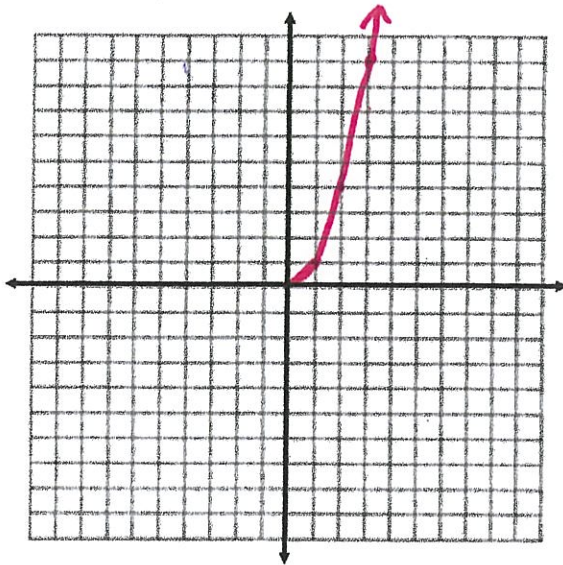


Name:

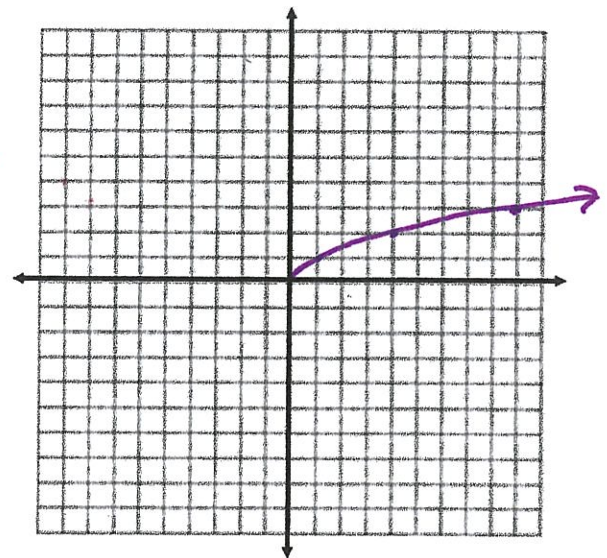
Solutions/Answers

1. Graph  $f(x) = x^2$  if  $x \geq 0$  on the LEFT grid, then graph the inverse function on the RIGHT grid.

Original function



Inverse function



2. Given the function  $f(x) = x^2$  if  $x \geq 0$ , use an Algebraic method to find a rule (equation & domain) for the inverse function.

$$y = x^2 \quad x \geq 0 \quad y \geq 0$$

$$x = y^2 \quad y \geq 0 \quad x \geq 0$$

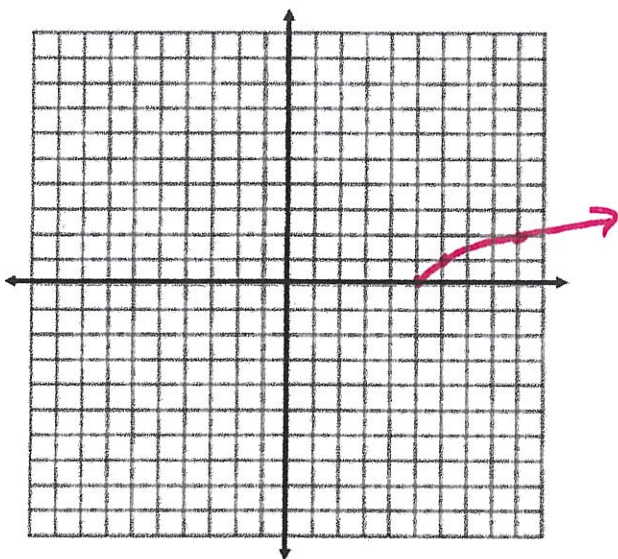
$$y^2 = x \quad y \geq 0 \quad x \geq 0$$

$$y = \sqrt{x} \quad y \geq 0 \quad x \geq 0$$

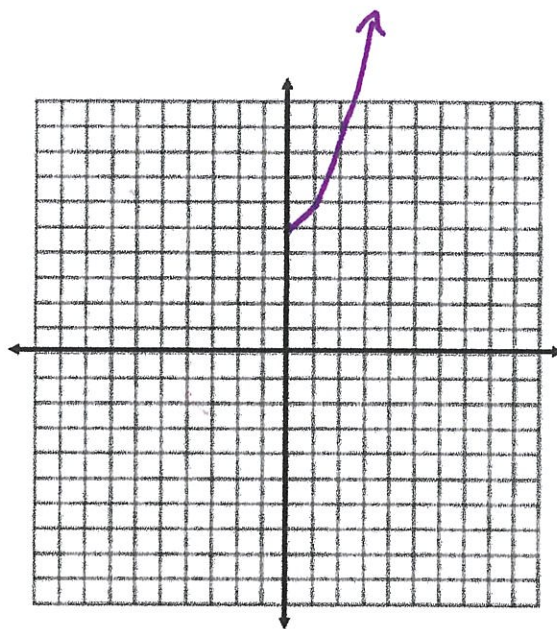
$$f^{-1}(x) = \sqrt{x} \quad x \geq 0$$

5. Graph  $f(x) = \sqrt{x-5}$  on the LEFT grid, then graph the inverse function on the RIGHT grid.

Original function



Inverse function



6. Given the function  $f(x) = \sqrt{x-5}$ , use an Algebraic method to find a rule (equation & domain) for the inverse function.

$$f(x) = \sqrt{x-5}$$

$$y = \sqrt{x-5}$$

$$x = \sqrt{y-5}$$

$$x^2 = y-5$$

$$y = x^2 + 5$$

$$x \geq 5$$

$$y \geq 0$$

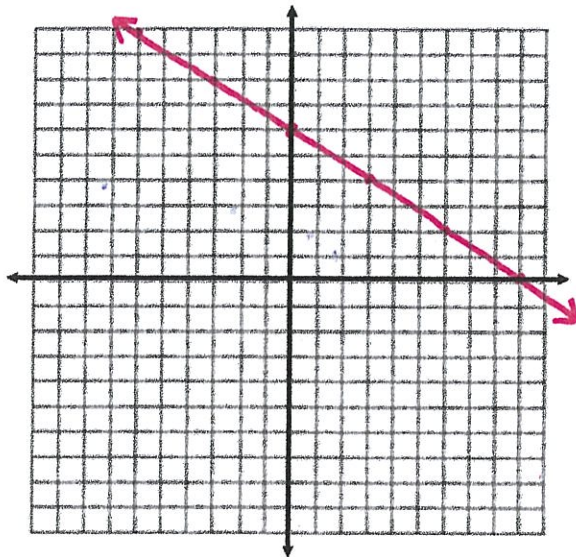
$$y \geq 5$$

$$x \geq 0$$

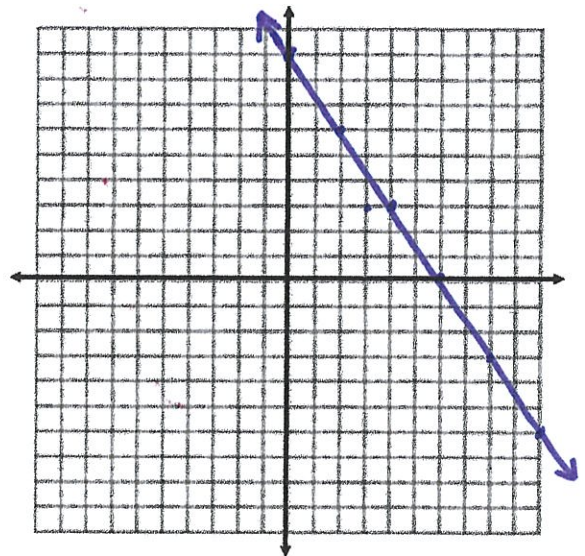
$$f^{-1}(x) = x^2 + 5 \text{ if } x \geq 0$$

7. First graph the function  $f(x) = \frac{-2}{3}x + 6$  on the LEFT grid, then graph the inverse function on the RIGHT grid.

Original function



Inverse function



8. Given the function  $f(x) = \frac{-2}{3}x + 6$ , use an Algebraic method to find a rule (equation & domain) for the inverse function.

$$f(x) = -\frac{2}{3}x + 6$$

$$y = -\frac{2}{3}x + 6$$

$$x = -\frac{3}{2}y + 6$$

$$3x = -2y + 18$$

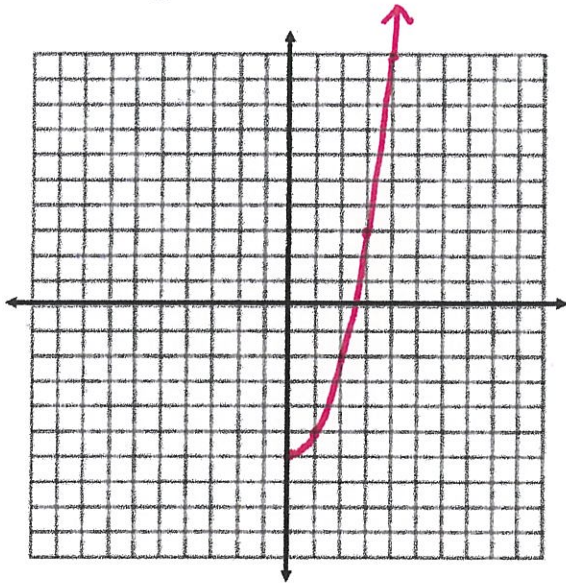
$$-\frac{3}{2}x = y - 9$$

$$y = -\frac{3}{2}x + 9$$

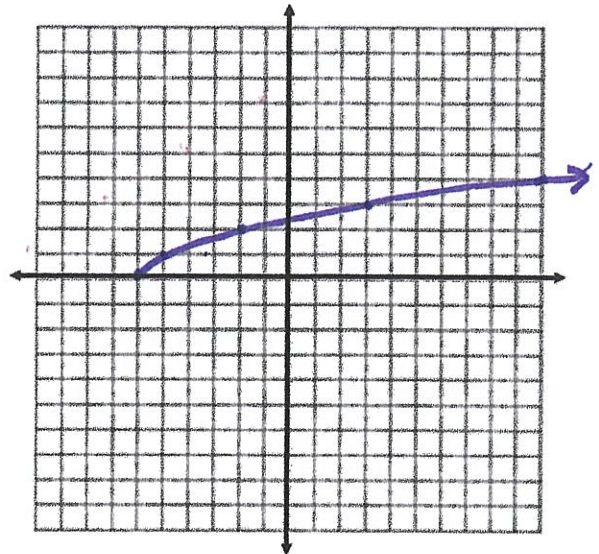
$$f^{-1}(x) = -\frac{3}{2}x + 9$$

9. First graph the function  $f(x) = x^2 - 6$  if  $x \geq 0$  on the LEFT grid, then graph the inverse function on the RIGHT grid.

Original function



Inverse function



10. Given the function  $f(x) = x^2 - 6$  if  $x \geq 0$ , use an Algebraic method to find a rule (equation & domain) for the inverse function.

$$f(x) = x^2 - 6 \text{ if } x \geq 0$$

$$y = x^2 - 6 \text{ if } x \geq 0$$

$$y \geq -6$$

$$x = y^2 - 6 \quad y \geq 0$$

$$x \geq -6$$

$$y^2 = x + 6$$

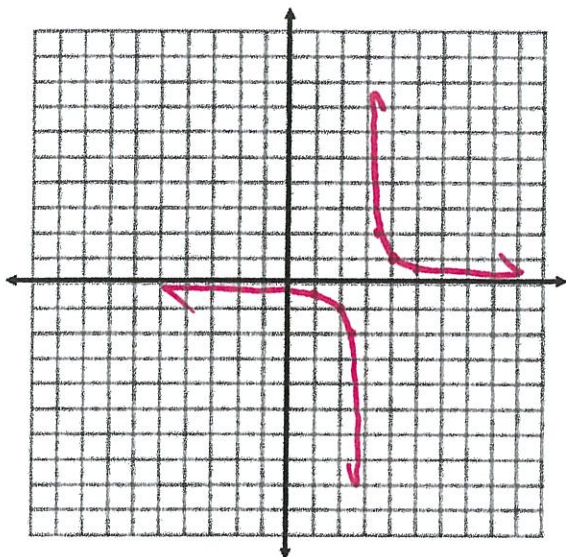
$$\sqrt{y^2} = \sqrt{x+6}$$

$$y = \sqrt{x+6}$$

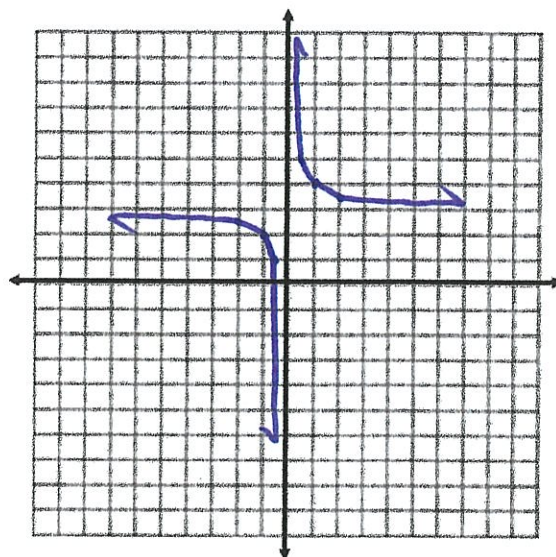
$$f^{-1}(x) = \sqrt{x+6} \text{ if } x \geq -6$$

11. First graph the function  $f(x) = \frac{1}{x-3}$  on the LEFT grid, then graph the inverse function on the RIGHT grid.

Original function



Inverse function



12. Given the function  $f(x) = \frac{1}{x-3}$ , use an Algebraic method to find a rule (equation & domain) for the inverse function.

Domain:  
 $(-\infty, 3) \cup (3, \infty)$

$$f(x) = \frac{1}{x-3}$$

$$y = \frac{1}{x-3}$$

$$x = \frac{1}{y-3}$$

$$x(y-3) = 1$$

$$xy - 3x = 1$$

$$xy = 1 + 3x$$

$$y = \frac{1+3x}{x}$$

Range:  
 $(-\infty, 0) \cup (0, \infty)$

Domain:  
 $(-\infty, 0) \cup (0, \infty)$

Range:  
 $(-\infty, 3) \cup (3, \infty)$

$$f^{-1}(x) = \frac{1+3x}{x}$$

Domain:  $(-\infty, 0) \cup (0, \infty)$

Range:  $(-\infty, 3) \cup (3, \infty)$